

Droplet polymerization method for synthesis of molecularly imprinted polymers

Description of Technology: A droplet polymerization process is provided to create efficacious molecularly imprinted polymers (MIPs). Such imprinted polymers have increased surface area for adsorptive or catalytic reactions. This method provides for monomer-template interactions in the absence of a suspending medium, thereby permitting formation of MIPs with increased template selectivity and substantial processing advantages. The process is particularly useful for separating isoflavones from soy whey.

Patent Listing:

1. **US Patent No. 6849701**, Issued February 1, 2005, “Droplet polymerization method for synthesis of molecularly imprinted polymers”

<http://patft.uspto.gov/netacgi/nph-Parser?Sect1=PTO2&Sect2=HITOFF&p=1&u=%2Fnetacgi%2FPTO%2Fsearch-bool.html&r=1&f=G&l=50&co1=AND&d=TEXT&s1=6,849,701.PN.&OS=PN/6,849,701&RS=PN/6,849,701>

Market Potential: Molecularly imprinted polymers, or MIPs, have become an area of tremendous scientific interest in the field of separations. Since the first publication of imprinting in an organic polymer three decades ago [G. Wulff, *Agnew. Chem. Int. Ed. Engl.*, 11: 341 (1972)], MIPs have become recognized as suitable for a vast number of industrial applications. Molecular imprinting creates selective adsorptive or catalytic sites within an organic or inorganic polymer.

The present droplet polymerization method is particularly well suited for industrial scale formation of MIPs possessing improved binding affinity, uniform particle size distribution, and good mass transfer performance. The method is simple, cost effective, and efficient. Although applicable to many industrial processes, preferred embodiments of the invention are useful for separation and recovery of isoflavones.

Benefits:

- Minimizes disruptions to monomer-template interactions through a rapid polymerization process and is not significantly inhibited by the suspending medium
- Greater adsorptive activity
- Improved imprinting efficiency
- Uses equipment that is readily available
- Uses compositions of suspending media that are environmentally friendly

Applications:

- Chemistry/Polymers

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